



Needs Assessment of Iranian Families with Neonates Hospitalized in the Neonatal Intensive Care Unit

Sedigheh Razzaghi¹, Yadollah Zahed Pasha², Karimollah Hajian-Tilaki³, Sousan Valizadeh⁴ and Afsaneh Arzani^{5,*}

¹Student Research Committee, Babol University of Medical Sciences, Babol, Iran

²Non-communicable Pediatric Diseases Research Center, Health Research Institute, Babol University of Medical Sciences, Babol, Iran

³Department of Statistics and Epidemiology, School of Medicine, Babol University of Medical Sciences, Babol, Iran

⁴Iranian Center for Evidence-Based Practice, Pediatric Nursing Department, School of Nursing and Midwifery, Tabriz University of Medical Sciences, Tabriz, Iran

⁵Non-communicable Pediatric Disease Research Center, Health Research Institute, School of Nursing and Midwifery, Babol University of Medical Sciences, Babol, Iran

*Corresponding author: Non-Communicable Pediatric Disease Research Center, Health Research Institute, School of Nursing and Midwifery, Babol University of Medical Sciences, Babol, Iran Email: arzaniaf@gmail.com

Received 2021 November 09; Revised 2022 March 31; Accepted 2022 July 24.

Abstract

Background: The neonate's birth and subsequent hospitalization cause families to experience various needs. Identifying the family's needs can lead to the provision of qualitative services and the implementation of family-centered development care (FCDC) by nurses.

Objectives: This study aimed to assess the needs of Iranian families with neonates in Neonatal Intensive Care Units (NICUs).

Methods: This cross-sectional study was conducted in northern Iran in 2018 - 2019 on 360 parents of neonates admitted by convenience sampling method to the neonatal intensive care unit (NICU). Data were collected by demographic questionnaire of parents and neonates and NICU Family Needs Inventory (NFNI) of Ward with five dimensions of proximity, assurance, information, comfort, and support. The data were analyzed using Pearson and Spearman correlation coefficients and a *t*-test by SPSS23 software.

Results: The most important dimensions of family needs were proximity to the infant (93.59%), information (90.53%), assurance (89.18%), comfort (86.70%), and support (80.78%). A comparison of the dimensions of the needs of primiparous, multiparous, and term preterm parents indicated that assurance for multiparous parents ($P < 0.001$) and comfort for parents with term infants ($P < 0.02$) were significantly higher than the other dimensions.

Conclusions: The study found that proximity to infants is the most important dimension of family needs. Therefore, the relevant authorities should take effective measures to ensure parent-infant proximity.

Keywords: Neonatal Intensive Care Unit, Neonatal, Parents, Needs Assessment

1. Background

Deliveries based on the number of gestational weeks can occur preterm, term, and post-term. Preterm and post-term deliveries may negatively affect the neonate's health and pose a concern for global health (1, 2). Globally, the birth rate of preterm infants is estimated at 5% to 18%, and in Iran, it is estimated at 10%. Most of these infants require admission to a neonatal intensive care unit (NICU) (3, 4).

Neonatal intensive care units (NICUs) treat and provide care for vulnerable infants, including preterm neonates and newborns with congenital malformations (5). The NICU hospitalization of infants affects the normal life routine, well-being, and family functioning (6, 7). Parents often face challenges in adapting to their parenting role and bonding with their infant, and their caregiving after dis-

charge is vital to their infant's development and growth (8, 9). It is therefore essential for parents of infants to receive more care to assist them in coping with their current challenges, such as mental health problems and parental barriers during their infant's hospitalization in the NICU, which can continue for many years after the birth of the child (10, 11). For parents, the NICU environment, equipment, alarms, and medical measures provided by health care are sources of stress (12). These stressors physically, mentally, and psychologically disrupt the parent-infant relationship and cause many emotional problems for parents (13).

Hence, identifying family needs reduces stress and emotional problems in parents (14), and nurses have the responsibility to address and guide parental problems as identified by family-centered development care (FCDC) (15). Therefore one of the best and most effective ways

to prevent injuries caused by hospitalization is FCDC by nurses and family involvement in infant care (16). In FCDC, the family is considered a significant member of the NICU care team and an important influence on the infant's health and well-being. Its goal is to foster the attachment relationship between the family and infant (15, 17). A first step in implementing FCDC and kangaroo mother care (KMC) is identifying parental needs nurses and applying those needs to the care program (18). A number of efforts are being made to implement the care method in Iran following the recommendations of the international Newborn Individualized Developmental Care and Assessment Program (NIDCAP) Federation (NFI) in the KMC and NIDCAP.

The NICU Family Needs Inventory (NFNI) is a self-report instrument to identify families' real needs during neonates' hospitalization in the NICU, which assesses 5 of the most important dimensions of need (19). In light of these findings, Hashim and Hussin concluded that information, assurance, and proximity to the infant are the most important needs of parents (20). In 2018, Lyu et al. demonstrated that the families of hospitalized children with cancer (chronic illness) required support, comfort, and information (21). A study by Sargent reported that assurance and information were the most important needs from the perspective of mothers (22). Since each parent has unique needs, nurses' understanding of parental needs differs from the actual needs of parents (23). Due to the fact that needs are influenced by culture and that there are various cultures in society, it is possible for parents from various regions and cultures to have different personalities and social characteristics (24). There have been limited studies in Iran on the needs of families in different cultures, so most studies have concentrated on the needs of mothers and those of admission and discharge (25) but have not addressed the needs of parents (mother and father) simultaneously, and their needs during neonatal hospitalization have been ignored. The assessment of needs is felt in different cultures, including in the cities of northern Iran.

2. Objectives

The purpose of this study was to assess the needs of families with neonates in NICUs of some hospitals in northern Iran.

3. Methods

3.1. Design

This cross-sectional study was performed in the NICUs of 4 medical centers affiliated with two universities of med-

ical sciences in northern Iran from 2018 - 2019 using convenience sampling among parents of infants who met the inclusion criteria and were selected randomly.

We recruited parents who had never experienced infant mortality or hospitalization in the neonatal intensive care unit and had infants with gestational ages greater than 30 weeks. Infant mortality was the exclusion criteria for parents.

3.2. Sample Size

The sample size required to assess the needs of the family, assuming the family needs assessment score has a coefficient of variation $CV = 0.02$, and the error limit is estimated to be $d = 0.02 \mu$, the sample size required at the 95% confidence level is about 360 samples.

$$n = \frac{z_{1-\frac{\alpha}{2}}^2 \sigma^2}{d^2}$$

$$\frac{1.96^2 (0.2 \mu)^2}{(0.02 \mu)^2} = 360$$

3.3. Measuring Instrument

The data were collected using the NICU Family Needs Inventory designed by Ward (19) and a demographic questionnaire for the parents (age, education, type of delivery, job, number of births) and neonates (gender, diagnosis, gestational age, birth order). The instrument is an edited version of the Critical Care Family Needs Inventory (CCFNI) designed by Molter (26). In addition to the 56 items on the questionnaire, the questionnaire assesses family needs in terms of comfort (getting hope and an honest response regarding treatment outcomes), proximity to infants (parental presence at the infant's side), information (information about the neonate's condition), assurance and support (getting professional assistance and social support to cope with stress as well as getting emotional and social support from others). A total of 56 questions were asked, including infant proximity (8 items), assurance (12 items), support (18 items), information (11 items), and comfort (7 items). Questions are scored on a Likert scale of 1 to 4 (not important, slightly important, important, and very important). The importance of needs was determined based on the parent's responses to the items in the questionnaire. According to Cronbach's alpha, this questionnaire had acceptable validity and reliability in the population of Iran in the Aemmi et al. study for mothers (0.8) and nurses (0.98) (27) and in the Mirjalili study for the dimensions of support 77%, comfort 66%, information 70%, proximity to infant 53%, assurance 72%. Also, the reliability of the questionnaire was reported in Ward's study by calculating Cronbach's alpha coefficient of 91% (19), and

in Sargent's study, the alpha coefficient for subscales was reported from 61% to 87% (22). In the present study, to determine the validity of the questionnaire, after translation, ten nursing faculty members, subspecialists in infants, head nurses, NICU staff, and parents were given a written explanation, and changes were made using their comments and corrective guidance. Cronbach's alpha was calculated to determine reliability at 0.92. For each dimension of need, the reliability coefficient was calculated using Cronbach's alpha method of assurance (0.66), proximity to infants (0.65), information (0.78), comfort (0.67), and support (0.84).

3.4. Data Collection

The researcher started collecting data after obtaining ethical approval from the University of Medical Sciences and observing ethical considerations (explaining the study's aims to the participants, participating voluntarily in the study, and keeping the information confidential).

As the mother might be absent in the first few days after delivery, the questionnaire was provided to parents from the third day to 24 hours before the baby was discharged from the hospital.

Both parents completed the self-report questionnaire simultaneously. Parents had the opportunity to complete the questionnaire and return it to the researcher 24 hours before discharge.

3.5. Data Analysis

After collecting the final data, SPSS 23 was used to analyze the data. Kolmogorov-Smirnov test was used to determine if the data had a normal distribution. In order to investigate the correlation between family dimensions and some quantitative and qualitative variables, Pearson and Spearman correlation coefficients were used. In order to compare the dimensions of the needs of families with newborns hospitalized with some of their individual and social characteristics (job, education, gestational age, birth order), the independent statistical *t*-test was applied, and $P < 0.05$ was considered as significant level. Because the dimensions of family needs in the questionnaire had different scores, standardization was done to calculate the dimensions of family needs based on importance to parents. The dimensions were calculated using a scale of one hundred.

4. Results

In this study, 360 parents were enrolled in the study. Most of the participating mothers had a non-academic education (50.2%) and were housewives (90.3%), and most of

the participating fathers had a non-academic education (53%) and were self-employed (80.9%). The majority of the newborns were term (51.9%), male (54.4%), first children (50.8%), and delivered by cesarean section (71.1%). In total, 36% of infants were hospitalized for respiratory distress syndrome, 19% for prematurity, 14% for icterus, and 31% for other illnesses.

Frequency distribution of the dimensions of needs according to the parents' importance suggested that proximity to the infant, information, assurance, comfort and support were (93.59%), (90.53%), (89.18%), (86.70%) and (80.78%), respectively.

The results related to dimensions of family needs showed that the maximum mean (\pm standard deviation) score in between the five dimensions related to the support dimension and its minimum was about comfort (Table 1).

Table 1. Mean and Standard Deviation of Needs Dimensions in Neonatal Intensive Care Unit

Needs Dimensions	Mean \pm SD
Proximity	29.95 \pm 7.4
Information	39.83 \pm 8.51
Assurance	42.81 \pm 5.82
Comfort	20.81 \pm 11.34
Support	54.93 \pm 11.42

According to the results of the comparison of dimensions of family needs with some variables of parents and infants, the mean assurance was higher in multiparous parents (90.27 \pm 6.08) than in primiparous parents (88.12 \pm 5.38), and the mean comfort was higher in parents of term infants (88.03 \pm 11.03) than in those of preterm infants (85.30 \pm 11.53), showing that this difference is statistically significant ($P < 0.05$). There was no significant difference between mothers' needs concerning education and employment ($P > 0.05$) (Tables 2 and 3).

The relationship between dimensions of parental need with some qualitative and quantitative variables (age, education, number of childbirths, birth order) demonstrated that there was a significant direct relationship between assurance with paternal and maternal ages, number of childbirths, and birth order ($P < 0.05$). It indicates that the need for assurance rose with the increasing age of parents, the number of births, and birth order. Moreover, there was a significant inverse relationship between paternal education and assurance and between maternal education and proximity ($P < 0.05$). The needs for proximity and assurance were lower in parents with increasing maternal and paternal education, respectively (Table 4).

Table 2. Comparison of Different needs of Families with infants Hospitalized in NICU Based on Gestational age, Multiparous and Primiparous ^a

Variables/Needs Dimensions	Primipara	Multipara	t-test Result			Preterm	Term	t-test Result		
			t	df	P-value			t	df	P-value
Proximity	94 ± 6.49	93.5 ± 7.56	1.52	346	0.25	93.64 ± 6.64	93.53 ± 7.40	0.146	358	0.884
Information	90.83 ± 7.81	90.22 ± 9.20	0.687	344	0.492	90.13 ± 8.56	90.89 ± 8.46	-0.849	358	0.396
Assurance	88.12 ± 5.38	90.27 ± 6.08	-3.358	358	0.001	89.05 ± 5.87	89.29 ± 5.80	-0.390	358	0.697
Comfort	87.14 ± 10.67	86.30 ± 12.03	0.699	358	0.485	85.30 ± 11.53	88.03 ± 11.03	-2.291	358	0.023
Support	80.24 ± 10.85	81.34 ± 11.99	-0.913	358	0.362	80.04 ± 10.94	81.45 ± 11.84	-1.168	358	0.243

^a Values are expressed as mean ± SD.

Table 3. Comparison of Different Needs of Mothers with Infants Hospitalized in Neonatal Intensive Care Unit Based on Education and Occupational Status ^a

Variables/Needs Dimensions	Academic Education	Non-academic Education	t-test Result			Housewife	Employee	t-test Result		
			t	df	P-value			t	df	P-value
Proximity	93.45 ± 6.97	93.71 ± 7.11	-0.353	358	0.724	93.52 ± 7.16	94.10 ± 5.85	-0.641	358	0.645
Information	90.29 ± 8.99	90.75 ± 8.02	-0.511	358	0.61	90.53 ± 8.66	90.45 ± 7.11	0.055	358	0.956
Assurance	89.09 ± 5.93	82.26 ± 5.73	-0.271	358	0.787	89.17 ± 5.96	89.16 ± 4.48	0.012	358	0.99
Comfort	87.05 ± 11.55	86.39 ± 11.15	0.554	358	0.58	86.55 ± 11.66	88.33 ± 7.74	-1.22	358	0.228
Support	80.49 ± 12.11	81.06 ± 10.72	-0.469	358	0.64	80.72 ± 11.61	81.3 ± 9.54	-0.284	358	0.776

^a Values are expressed as mean ± SD.

Table 4. Correlation Between Needs dimensions of Families with Infants hospitalized in Neonatal Intensive Care Unit and Some Quantitative and Qualitative Variables

Variables/Dimensions Need As	Paternal Age		Maternal Age		Number of Childbirths		Birth Order		Paternal Education		Maternal Education	
	r	p	r	p	r	p	r	p	r	P	r	p
Assurance	0.160	0.002	0.139	0.008	0.218	< 0.01	0.242	< 0.01	-0.129	0.015	-0.061	0.249
Proximity	-0.015	0.779	-0.029	0.588	-0.061	0.249	-0.047	0.375	0.090	0.087	-0.063	0.023
Information	0.046	0.379	-0.003	0.958	-0.019	0.714	0.002	0.937	-0.070	-0.184	-0.024	0.652
Comfort	-0.034	0.514	-0.001	0.982	-0.015	0.776	-0.012	0.825	0.053	0.316	0.008	0.886
Support	0.018	0.729	0.043	0.413	0.036	0.490	0.042	0.431	-0.067	0.205	-0.038	0.474

5. Discussion

The results of the present study indicated that parents' needs range from more important to less important in terms of proximity to their infant, information, assurance, comfort, and support. Like the current study, Wang et al. found that parents prioritized infant proximity more than any other dimension of need (28). Consistent with the results of the current study, Aemmi et al. (27) concluded that the need for proximity to infants was more important among mothers. Cleveland acknowledge that nurses should have a positive attitude toward mothers who are able to care for their infants with their supervision, which contributes to a closer bond between mother and child (29). Guillaume et al. have demonstrated that nurses' caring attitude and regular communication according to parents' needs are essential prerequisites for greater parental involvement in the NICU (30).

Studies such as the ongoing study have reported that the least important need is support (19, 22, 23, 28). This may be due to the fact that health care providers are adequately meeting the support need or that the importance of other needs may make the support need less important.

However, Alsaari et al. in Saudi Arabia found that assurance, proximity, and information were the most important needs from the perspective of parents, which is different from the results presented in this study (31).

The difference may be due to changes in the questionnaire used for determining parental needs in the above studies. Since it was possible for the participated parents to have unlimited visits to the NICU in Alsaari et al.'s study (31). Vaskelyte and Butkeviciene stated that parents' primary needs were assurance, proximity to their infants, information, support, and comfort (32), which is inconsistent with the results of the present study. Considering the fact that the questionnaires for the needs assessment were completed in the first days of an infant's hospitalization in the abovementioned study (32), parents in the first days of their infants' hospitalization needed more assurance and confidence about their infant's future, and mothers were unable to provide basic care in the first days due to their high levels of anxiety. In the present study, questionnaires were filled out at different times during the infant's hospitalization, thereby affecting the type of parental needs. According to Sargent, in another study, the mothers' priority

needs were assurance, information, infant proximity, comfort, and support, which is in contrast to the results of the present study (22). Our study evaluated both the needs of mothers and fathers of neonates admitted to level II and III neonatal intensive care units, while Sargent's study evaluated only the needs of mothers with neonates admitted to level III neonatal intensive care units.

From the perspective of mothers, Mirjalili et al. found that assurance was their most important need, which is contrary to the findings of the ongoing study (25). This difference may be related to the questionnaire used to determine the maternal need or the time for completing the questionnaire (admission time). The present study found that parents of term infants felt a greater need for comfort. Multiparous parents reported a greater need for assurance than primiparous parents. In terms of academic or non-academic education, there was no significant difference between mothers' needs. As illustrated by Alves et al., parents with a lower level of education have a greater need for comfort and support, whereas parents with higher levels of education have a greater need for assurance and comfort (18). In Mundy et al.'s study, no significant difference was found among the dimensions of needs in parents with less than a 12th-grade education. Those with 12th-grade education reported a greater need for support and information, and those with academic education reported a greater need for support. The needs of primiparous and multiparous parents did not differ significantly (23). According to Mirjalili et al., mothers with preterm infants require less information than other mothers (25), which is inconsistent with our results. Maybe the reason is that Mirjalili et al.'s study focused on the needs of infants admission, whereas our study examined parental needs during hospitalization with large sample size. In addition, the questionnaires used in both studies were different (25).

5.1. Conclusions

As indicated by the current study, infant proximity and information are more important to families, while support is less important. Therefore, it is recommended that maternal and neonatal health policymakers should consider the results of this study for providing unlimited or least limited possibilities to attend in the NICU for families in addition to facilitating the emotional bond between infant and parents, parent's mental health, and reducing parents' emotional reactions and reduce the stress parents experience during their infant's hospitalization. The presence of parents in the NICU also fulfills the FCC and NIDCAP care philosophy and influences the continuation of breastfeeding. Furthermore, identifying and meeting the family's real needs can be used as a strategy for improving the

health care provided. This also promotes family compatibility during the hospitalization of an infant.

5.2. Limitation

One limitation of our study was the inaccessibility of all the NICUs in Mazandaran province since culture, customs, and beliefs can influence people's needs. In light of the cultural and ethnic diversity, conducting further cultural and social studies with different populations is recommended to identify the needs of different cultures. Additionally, this study is limited by the lack of knowledge regarding the level of parental involvement in completing the questionnaire.

Acknowledgments

The authors would like to thank the study parents, who completed the questionnaires carefully despite their stress and concerns, as well as the Babol University of Medical Sciences and the Mazandaran University of Medical Sciences for their assistance. This article is based on a master's thesis in neonatal intensive care.

Footnotes

Authors' Contribution: SR designed the study, collected and analyzed the data, and wrote the article; YZ and SV reviewed the article; KH analyzed data and wrote the article; AA designed the study, and she was a major contributor to writing the manuscript. All authors read and approved the final manuscript.

Conflict of Interests: There is no conflict of interest to declare.

Data Reproducibility: The data presented in this study are openly available in one of the repositories or will be available on request from the corresponding author by this journal representative at any time during submission or after publication. Otherwise, all consequences of possible withdrawal or future retraction will be with the corresponding author.

Ethical Approval: This study was conducted after approving by the Ethics Committee and receiving an ethical code from Babol University of Medical Science (IR MU BABOL.HRI.REC.1397.020; link: ethics.research.ac.ir/form/9ah4qvbxxe12ju.pdf).

Funding/Support: This research received financial support from Babol University of Medical Sciences (pajouhan.mubabol.ac.ir/webdocument/load.action?webdocument_code=1000&masterCode=11004577).

References

- Romero R, Dey SK, Fisher SJ. Preterm labor: one syndrome, many causes. *Science*. 2014;**345**(6198):760-5. doi: [10.1126/science.1251816](https://doi.org/10.1126/science.1251816). [PubMed: [25124429](https://pubmed.ncbi.nlm.nih.gov/25124429/)]. [PubMed Central: [PMC4191866](https://pubmed.ncbi.nlm.nih.gov/PMC4191866/)].
- Spong CY. Defining "term" pregnancy: recommendations from the Defining "Term" Pregnancy Workgroup. *JAMA*. 2013;**309**(23):2445-246. doi: [10.1001/jama.2013.6235](https://doi.org/10.1001/jama.2013.6235). [PubMed: [23645117](https://pubmed.ncbi.nlm.nih.gov/23645117/)].
- Kim AR. Addressing the Needs of Mothers with Infants in the Neonatal Intensive Care Unit: A Qualitative Secondary Analysis. *Asian Nurs Res (Korean Soc Nurs Sci)*. 2020;**14**(5):327-37. doi: [10.1016/j.anr.2020.09.004](https://doi.org/10.1016/j.anr.2020.09.004). [PubMed: [32937202](https://pubmed.ncbi.nlm.nih.gov/32937202/)].
- Dezvarae N, Alaekarahrudi F, KhanaliAgan L, TalebiGhane E. [The mother-newborn s attachment and its related factors in mothers of hospitalized preterm neonates]. *Journal of Health and Care (JHC)*. 2015;**17**(4):340-9. Persian.
- Ichijima E, Kirk R, Hornblow A. Parental support in neonatal intensive care units: a cross-cultural comparison between New Zealand and Japan. *J Pediatr Nurs*. 2011;**26**(3):206-15. doi: [10.1016/j.pedn.2009.10.003](https://doi.org/10.1016/j.pedn.2009.10.003). [PubMed: [21601144](https://pubmed.ncbi.nlm.nih.gov/21601144/)].
- Lasiuk GC, Comeau T, Newburn-Cook C. Unexpected: an interpretive description of parental traumas' associated with preterm birth. *BMC Pregnancy Childbirth*. 2013;**13**(Suppl 1):S13. doi: [10.1186/1471-2393-13-S1-S13](https://doi.org/10.1186/1471-2393-13-S1-S13). [PubMed: [23445715](https://pubmed.ncbi.nlm.nih.gov/23445715/)]. [PubMed Central: [PMC3561145](https://pubmed.ncbi.nlm.nih.gov/PMC3561145/)].
- Rich-Edwards JW, Fraser A, Lawlor DA, Catov JM. Pregnancy characteristics and women's future cardiovascular health: an underused opportunity to improve women's health? *Epidemiol Rev*. 2014;**36**(1):57-70. doi: [10.1093/epirev/mxt006](https://doi.org/10.1093/epirev/mxt006). [PubMed: [24025350](https://pubmed.ncbi.nlm.nih.gov/24025350/)]. [PubMed Central: [PMC3873841](https://pubmed.ncbi.nlm.nih.gov/PMC3873841/)].
- Hagen IH, Iversen VC, Svindseth MF. Differences and similarities between mothers and fathers of premature children: a qualitative study of parents' coping experiences in a neonatal intensive care unit. *BMC Pediatr*. 2016;**16**:92. doi: [10.1186/s12887-016-0631-9](https://doi.org/10.1186/s12887-016-0631-9). [PubMed: [27422718](https://pubmed.ncbi.nlm.nih.gov/27422718/)]. [PubMed Central: [PMC4946152](https://pubmed.ncbi.nlm.nih.gov/PMC4946152/)].
- Kim AR, Tak YR, Shin YS, Yun EH, Park HK, Lee HJ. Mothers' Perceptions of Quality of Family-Centered Care and Environmental Stressors in Neonatal Intensive Care Units: Predictors of and Relationships with Psycho-emotional Outcomes and Postpartum Attachment. *Matern Child Health J*. 2020;**24**(5):601-11. doi: [10.1007/s10995-020-02876-9](https://doi.org/10.1007/s10995-020-02876-9). [PubMed: [31912379](https://pubmed.ncbi.nlm.nih.gov/31912379/)].
- Amorim M, Silva S, Kelly-Irving M, Alves E. Quality of life among parents of preterm infants: a scoping review. *Qual Life Res*. 2018;**27**(5):1119-31. doi: [10.1007/s11136-017-1771-6](https://doi.org/10.1007/s11136-017-1771-6). [PubMed: [29248997](https://pubmed.ncbi.nlm.nih.gov/29248997/)].
- Ionio C, Colombo C, Brazzoduro V, Mascheroni E, Confalonieri E, Castoldi F, et al. Mothers and Fathers in NICU: The Impact of Preterm Birth on Parental Distress. *Eur J Psychol*. 2016;**12**(4):604-21. doi: [10.5964/ejop.v12i4.1093](https://doi.org/10.5964/ejop.v12i4.1093). [PubMed: [27872669](https://pubmed.ncbi.nlm.nih.gov/27872669/)]. [PubMed Central: [PMC5114875](https://pubmed.ncbi.nlm.nih.gov/PMC5114875/)].
- Unesi Z, Nakhaee S, Nasirizade M, Panah AI. Evaluation of the relationship between perceived nursing support and parental stress among mothers of hospitalized preterm infants in neonatal intensive care units. *Mod Care J*. 2017;**14**(4). e66594. doi: [10.5812/modernc.66594](https://doi.org/10.5812/modernc.66594).
- Kardas Ozdemir F, Kucuk Alemdar D. Supporting of the Fathers to Visit Their Infants in Neonatal Intensive Care Unit Decreases Their Stress Level: A Pretest-Posttest Quasi-Experimental Study. *Community Ment Health J*. 2017;**53**(4):490-5. doi: [10.1007/s10597-016-0066-7](https://doi.org/10.1007/s10597-016-0066-7). [PubMed: [27896502](https://pubmed.ncbi.nlm.nih.gov/27896502/)].
- Jubinville J, Newburn-Cook C, Hegadoren K, Lacaze-Masmonteil T. Symptoms of acute stress disorder in mothers of premature infants. *Adv Neonatal Care*. 2012;**12**(4):246-53. doi: [10.1097/ANC.0b013e31826090ac](https://doi.org/10.1097/ANC.0b013e31826090ac). [PubMed: [22864005](https://pubmed.ncbi.nlm.nih.gov/22864005/)].
- Davila RC, Segre LS. A Nurse-Based Model of Psychosocial Support for Emotionally Distressed Mothers of Infants in the NICU. *J Obstet Gynecol Neonatal Nurs*. 2018;**47**(1):114-21. doi: [10.1016/j.jogn.2016.12.007](https://doi.org/10.1016/j.jogn.2016.12.007). [PubMed: [28482172](https://pubmed.ncbi.nlm.nih.gov/28482172/)].
- Ghasemi M, Dehdari T, Mohagheghi P, Gohari MR. [The effect of educational intervention based on theory of planned behavior (TPB) for improving method of care of premature infant by mother]. *Razi Journal of Medical Sciences*. 2014;**20**(115):39-48. Persian.
- Staniszewska S, Brett J, Redshaw M, Hamilton K, Newburn M, Jones N, et al. The POPPY study: developing a model of family-centred care for neonatal units. *Worldviews Evid Based Nurs*. 2012;**9**(4):243-55. doi: [10.1111/j.1741-6787.2012.00253.x](https://doi.org/10.1111/j.1741-6787.2012.00253.x). [PubMed: [22698274](https://pubmed.ncbi.nlm.nih.gov/22698274/)].
- Alves E, Severo M, Amorim M, Grande C, Silva S. [A short form of the neonatal intensive care unit family needs inventory]. *J Pediatr (Rio J)*. 2016;**92**(1):73-80. Portuguese. doi: [10.1016/j.jped.2015.04.010](https://doi.org/10.1016/j.jped.2015.04.010). [PubMed: [26453515](https://pubmed.ncbi.nlm.nih.gov/26453515/)].
- Ward K. Perceived needs of parents of critically ill infants in a neonatal intensive care unit (NICU). *Pediatr Nurs*. 2001;**27**(3):281-6. [PubMed: [12964668](https://pubmed.ncbi.nlm.nih.gov/12964668/)].
- Hashim F, Hussin R. Family needs of patient admitted to intensive care unit in a public hospital. *Procedia Soc Behav Sci*. 2012;**36**:103-11. doi: [10.1016/j.sbspro.2012.03.012](https://doi.org/10.1016/j.sbspro.2012.03.012).
- Lyu QY, Wong FKY, You LM, Zhou XZ. Unmet Family Needs Concerning Healthcare Services in the Setting of Childhood Hospitalization for Cancer Treatment in Mainland China: A Qualitative Study. *J Pediatr Nurs*. 2019;**44**:e66-71. doi: [10.1016/j.pedn.2018.11.003](https://doi.org/10.1016/j.pedn.2018.11.003). [PubMed: [30503155](https://pubmed.ncbi.nlm.nih.gov/30503155/)].
- Sargent AN. Predictors of needs in mothers with infants in the neonatal intensive care unit. *J Reprod Infant Psychol*. 2009;**27**(2):195-205. doi: [10.1080/02646830802350849](https://doi.org/10.1080/02646830802350849).
- Mundy CA. Assessment of family needs in neonatal intensive care units. *Am J Crit Care*. 2010;**19**(2):156-63. doi: [10.4037/ajcc2010130](https://doi.org/10.4037/ajcc2010130). [PubMed: [20194612](https://pubmed.ncbi.nlm.nih.gov/20194612/)].
- Sikorova L, Kucova J. The needs of mothers to newborns hospitalised in intensive care units. *Biomed Pap Med Fac Univ Palacky Olomouc Czech Repub*. 2012;**156**(4):330-6. doi: [10.5507/bp.2011.046](https://doi.org/10.5507/bp.2011.046). [PubMed: [22660204](https://pubmed.ncbi.nlm.nih.gov/22660204/)].
- Mirjalili M, Azizade forouzi M, Sabzevari S, heidarzadeh A, Hagh-dost A. [Assess the admission needs of the mothers of hospitalized in the neonatal intensive care unit]. *Iranian Journal of Pediatric Nursing*. 2015;**2**(2):1-9. Persian.
- Molter NC. Needs of relatives of critically ill patients: a descriptive study. *Heart Lung*. 1979;**8**(2):332-9. [PubMed: [253712](https://pubmed.ncbi.nlm.nih.gov/253712/)].
- Aemmi SZ, Ahmadi Z, Reyhani T, Haghani H. [Comparison of Perceptions of Nurses and Premature Infants' Mothers about Mothers' Needs in Neonatal Intensive Care Unit]. *Hayat*. 2013;**19**(2):14-26. Persian.
- Wang L, He JL, Fei SL. Perceived Needs of Parents of Premature Infants in NICU. *West J Nurs Res*. 2018;**40**(5):688-700. doi: [10.1177/0193945916683679](https://doi.org/10.1177/0193945916683679). [PubMed: [28322643](https://pubmed.ncbi.nlm.nih.gov/28322643/)].
- Cleveland LM. Parenting in the neonatal intensive care unit. *J Obstet Gynecol Neonatal Nurs*. 2008;**37**(6):666-91. doi: [10.1111/j.1552-6909.2008.00288.x](https://doi.org/10.1111/j.1552-6909.2008.00288.x). [PubMed: [19012717](https://pubmed.ncbi.nlm.nih.gov/19012717/)].
- Guillaume S, Michelin N, Amrani E, Benier B, Durrmeyer X, Lescure S, et al. Parents' expectations of staff in the early bonding process with their premature babies in the intensive care setting: a qualitative multicenter study with 60 parents. *BMC Pediatr*. 2013;**13**:18. doi: [10.1186/1471-2431-13-18](https://doi.org/10.1186/1471-2431-13-18). [PubMed: [23375027](https://pubmed.ncbi.nlm.nih.gov/23375027/)]. [PubMed Central: [PMC3568058](https://pubmed.ncbi.nlm.nih.gov/PMC3568058/)].
- Alsaiani EM, Magarey J, Rasmussen P. An Investigation of the Needs of Saudi Parents of Preterm Infants in the Neonatal Intensive Care Unit. *Cureus*. 2019;**11**(1). e3887. doi: [10.7759/cureus.3887](https://doi.org/10.7759/cureus.3887). [PubMed: [30911444](https://pubmed.ncbi.nlm.nih.gov/30911444/)]. [PubMed Central: [PMC6424543](https://pubmed.ncbi.nlm.nih.gov/PMC6424543/)].
- Vaskelyte A, Butkeviciene R. [Needs of parents with premature newborns in the Neonatal Intensive Care Unit: parents' and nurses' perceptions]. *Medicina (Kaunas)*. 2010;**46**(Suppl 1):43-53. Lithuanian. [PubMed: [20516769](https://pubmed.ncbi.nlm.nih.gov/20516769/)].